B. Sc. DEGREE (C.B.C.S.) EXAMINATION, MARCH 2023

2022 Admissions Regular & 2021 Admissions Supplementary / Improvement And 2020, 2019 And 2018 Admissions Supplementary

SEMESTER II - COMPLEMENTARY COURSE 2 (STATISTICS)

(For PSYCHOLOGY)

PY2CMT06 - STATISTICAL TOOLS

Time : 3 Hours   **Maximum Marks : 80**

Part A

I. Answer any Ten questions. Each question carries 2 marks   **(10x2=20)**

1. Define dispersion.

2. Write the formula to calculate the coefficient of quartile deviation.

3. Compute the coefficient of quartile deviation for the given data. 28, 18, 20, 24, 30, 15, 47, 27.

4. Calculate the standard deviation of 2, 3, 5, 4, 6, 8, 10, 2.

5. Write the moment measures of skewness and kurtosis.

6. Write the formula to calculate Karl Pearson's coefficient of skewness.

7. Find median if Bowley's coefficient of skewness and quartiles are respectively -0.048, 17 and 38.

8. For a frequency distribution first four central moments are 0, 11.6, 0, 256.4 then find its moment measure of kurtosis.

9. Define perfect correlation.

10. Distinguish between linear and non-linear correlation.

11. Regression equation of Y on X is 2x + 4y - 5 = 0 and X on Y is 3x + 2y + 4 = 0, then find the regression coefficients.

12. The regression coefficients of a bivariate distribution are 4.2 and 0.5. Comment on the result.

Part B

II. Answer any Six questions. Each question carries 5 marks   **(6x5=30)**

13. Explain the step deviation method to calculate standard deviation.

14. State the merits and demerits of standard deviation and write down its corresponding relative measure.

15. Calculate quartile deviation and its coefficient of the data given below.

Age	0-5	5-10	10-15	15-20	20-25	25-30
No. of persons	57	256	132	25	10	12

16. State the relation connecting raw and central moments.

17. Explain the uses of moments.

18. For a certain distribution $\mu_1' = -2$, $\mu_2' = 35$, $\mu_3' = -105$ and $\mu_4' = 817$. Compute first four central moments.

19. State whether the given distribution is positively or negatively skewed using any one measure of skewness with reason.

Class	0-50	50-100	100-150	150-200	200-250	250-300
Frequency	57	256	132	25	10	12

20. Distinguish between positive and negative correlation.

21. The two regression equations are 5x - 4y + 20 = 0 and 2x - 5y + 110 = 0 and $\sigma_x = 10.$

Compute (i) $\bar{x}$ and $\bar{y}$.

   (ii) r.

   (iii) σ_y.

Part C

III. Answer any Two questions. Each question carries 15 marks   **(2x15=30)**

22. State which model has a longer average life and which model has more uniformity.

Life in years	No. of sets examined	
	Model A	Model B
0-2	5	2
2-4	16	7
4-6	13	12
6-8	7	19
8-10	5	9
10-12	4	1

23. Compute the moment measures of skewness and kurtosis and comment on the result.

Height	59	61	63	65	67	69	71	73	75
No. of students	0	2	6	20	40	20	8	2	0

24. Compute the coefficient of correlation between heights and weights of ten persons and comment.

Height (inches)	62	72	78	58	65	70	66	63	60	72
Weight (Kgs)	50	65	63	50	54	60	61	55	54	65

25. Obtain the regression equations. Hence find

(i) y when x = 70.

(ii) x when y = 60.

x	42	44	58	55	89	98	66
y	56	49	53	58	65	76	58